



Our Docket No.: 042390.P3674R

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
O'Connor	)	Examiner: Vortman, Anatoly
	)	
Application No.: 09/976,912	)	<b>Art Group: 2835</b>
	)	
Filed: May 14, 2002	)	
	)	
For: Cooling System for Thin Profile	)	
<u>Electronic and Computer Devices</u>	)	

APPEAL BRIEF  
IN SUPPORT OF APPELLANT'S APPEAL  
TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Sir:

Applicant (hereinafter "Appellant") hereby submits this Brief in support of its appeal from a final decision by the Examiner, mailed July 14, 2005, in the above-referenced Application. Appellant respectfully requests consideration of this appeal by the Board of Patent Appeals and Interferences (hereinafter "Board") for allowance of the above-captioned patent application.

An oral hearing is not desired.

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**I. REAL PARTY IN INTEREST**

The invention is assigned to Intel Corporation of 2200 Mission College Boulevard, Santa Clara, California 95052.

**II. RELATED APPEALS AND INTERFERENCES**

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision.

**III. STATUS OF THE CLAIMS**

Claims 1-32, 35-42, 45-48 and 52 are currently pending in the above-referenced application. In the Final Office Action mailed July 14, 2005 (hereinafter "Final Office Action"), claims 1-32, 35-42, 45-48 and 52 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. Claims 1-7, 9-14, 16-26, 28-32, 35-42, 45-48 and 52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kitahara et al. (U.S. Patent No. 5,583,316) ("*Kitahara*"). Claims 8, 15, and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Kitahara* in view of Nelson (U.S. Patent No. 4,923,000) ("*Nelson*"). Claims 1-32, 35-42, 45-48 and 52 are being appealed.

#### **IV. STATUS OF AMENDMENTS**

Claims 1-32, 35-42, 45-48 and 52 are currently pending in the subject application. These claims were finally rejected in the Final Office Action mailed July 14, 2005. In response to the Final Office Action mailed on July 14, 2005, rejecting claims 1-17, 21 and 22 under 35 U.S.C. §103(a), Appellant filed an Amendment After Final Action under 37 C.F.R. § 1.116 on September 14, 2005. Subsequently, an Advisory Action was mailed on September 27, 2005. Appellant filed a Notice of Appeal on September 30, 2005. A copy of all claims on appeal is attached hereto as an Appendix of Claims.

## **V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

According to one embodiment, an apparatus for removing heat from a heat generating component is disclosed. The apparatus includes a heat pipe having an evaporator portion and a condenser portion wherein the heat generating component is thermally coupled to the evaporator portion. The apparatus also includes an air duct comprising a housing having internal fins and a clamp. The air duct directs an air flow from an inlet port located near the center of the air duct to first and second exit ports located at opposite end portions of the air duct. The condenser portion of the heat pipe is attached to the housing via the clamp. Further, the apparatus includes an air flow generator coupled to the inlet port for producing the air flow. See Figures 1A, 1B, 4 and 5.

In another embodiment, an apparatus for cooling an integrated circuit package assembly located within a portable computer chassis is disclosed. The apparatus includes a heat exchanger and a heat pipe. The heat exchanger includes an air duct having a thin cross-section relative to the width of the duct wherein the air duct includes a housing having first and second major internal surfaces, an array of fins disposed between the first and second surfaces, and a clamp. The housing further includes an inlet port disposed at or near a center portion of the air duct and first and second exit ports disposed at respective opposite first and second end portions of the duct. Further, the heat exchanger includes an air flow generator coupled to the inlet port for producing a first and a second air flow. The first air flow is directed from the inlet port to the first exit port and the second air flow is directed from the inlet port to the second exit port. The heat pipe includes an evaporator portion and a condenser portion. The integrated circuit package is

thermally coupled to the evaporator portion and the condenser portion is coupled to the housing of the air duct via the clamp. See Figures 1A, 1B, 4 and 5.

Yet a further embodiment discloses a portable computer having an enclosure with an air duct including a housing with internal fins and a clamp. The air duct directs an air flow from an inlet port located near the center of the air duct to first and second exit ports located adjacent opposite end portions of the air duct. The air duct has a substantially equal width as the enclosure where the enclosure includes first, second and third sides. The portable computer also includes an air flow generator coupled to the inlet port for producing the air flow and a heat transfer means thermally coupling a heat generating component located within the enclosure to the air duct housing. The heat transfer means is coupled to the housing of the air duct via the clamp. See Figures 1A, 1B, 4 and 5.

A method for cooling a heat generating component located within an enclosed compartment is described. The method includes thermally coupling the heat generating component to the housing of an air duct having a thin cross-section relative to the width of the air duct by thermally coupling the component to an evaporator portion of a heat pipe and thermally coupling a condenser portion of the heat pipe to the air duct housing wherein the condenser portion of the heat pipe is physically coupled to the housing of the air duct via the clamp. The method further includes producing an air flow through the air duct by directing air external to the compartment into an inlet port located at or near the center of the air duct and splitting the air flow into a first air flow and a second air flow. The first air flow is directed to a first exit port located at a first end portion of the air duct, while the second air flow being directed to a second exit port located at a second end portion of the air duct. See Figures 1A, 1B, 4 and 5.

In a further embodiment, an apparatus is disclosed having a heat pipe including an evaporator portion and a condenser portion wherein the heat pipe is coupled to a heat generating component at the evaporator portion of the heat pipe, an air duct comprising a housing. The air duct directs an air flow from an inlet port, located at or near a middle of the air duct, to a first and second exit port located at opposite ends of the air duct. The air duct is coupled to the condenser portion of the heat pipe via a clamp mounted on the housing. The apparatus also includes an air flow generator coupled to the inlet port to produce the air flow. See Figures 1A, 1B, 4 and 5.

A heat exchanger is disclosed. The heat exchanger includes an air duct having a housing including an inlet port located at or near a middle of the air duct, a clamp and a first and second opposing exit ports and an air flow generator coupled to the inlet port to produce an air flow. The air flow is directed from the inlet port to the exit port. The heat exchanger further includes a heat pipe having an evaporator portion and a condenser portion. The evaporator portion is coupled to an integrated circuit package and the condenser portion being coupled to the air duct via the clamp. See Figures 1A, 1B, 4 and 5.

A system is disclosed comprising an air duct housing having an inlet port located at or near a middle of the air duct and a clamp and a first and second exit port located at opposite ends of the air duct. The system also includes an air flow generator coupled to the inlet port to produce an air flow and a heat pipe coupling a heat generating component to the air duct housing via the clamp. See Figures 1A, 1B, 4 and 5.

A further method is disclosed including thermally coupling a heat generating component to a housing of an air duct, thermally coupling the component to an evaporator portion of a heat pipe, and thermally coupling a condenser portion of the heat

pipe to the air duct housing. The condenser portion of the heat pipe is physically coupled to the housing of the air duct via the clamp. Additionally, the method includes producing an air flow through the air duct by directing air external into an inlet port located at or near a center point in the air duct and splitting the air flow into a first air flow and a second air flow. The first air flow is directed to a first exit port located at a first end of the air duct and the second air flow being directed to a second exit port located at a second end of the air duct opposing the first end. See Figures 1A, 1B, 4 and 5.

A further apparatus is disclosed comprising a heat pipe to be coupled to a heat generating component an air duct and an air flow generator coupled to an inlet port to produce air flow. The air duct includes a housing having internal fins wherein the air duct directs an air flow from the inlet port positioned at a central point of the air duct to first and second exit ports located at opposite end portions of the air duct. The housing is coupled to the heat pipe via a clamp. See Figures 1A, 1B, 4 and 5.

Another embodiment of a heat exchanger is disclosed having an air duct including an inlet port situated at a central point of the air duct, first and second exit ports disposed at respective opposite first and second end portions of the duct, and a clamp. Moreover, the heat exchanger includes an air flow generator coupled to the inlet port to produce a first and a second air flow wherein the first air flow is directed from the inlet port to the first exit port and the second air flow being directed from the inlet port to the second exit port. A heat pipe is coupled to the housing of the air duct via the clamp. See Figures 1A, 1B, 4 and 5.

A method is disclosed comprising thermally coupling a heat generating component to an air duct thermally coupling the component to a heat pipe, and thermally coupling the heat pipe to the air duct the heat pipe being physically coupled to the



housing of the air duct via the clamp. In addition, the method includes producing an air flow through the air duct by directing air external to the air duct into an inlet port situated at a central point of the air duct and splitting the air flow into a first air flow and a second air flow. The first air flow is directed to a first exit port located at a first end portion of the air duct and the second air flow is directed to a second exit port located at a second end portion of the air duct. See Figures 1A, 1B, 4 and 5.

**VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1-32, 35-42, 45-48 and 52 stand rejected under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement.

Claims 1-7, 9-14, 16-26, 28-32, 35-42, 45-48 and 52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Kitahara*.

Claims 8, 15, and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Kitahara* in view of *Nelson*.

## VII. ARGUMENT

### 1. THE PENDING CLAIMS 1-32, 35-42, 45-48 AND 52 WERE IMPROPERLY REJECTED UNDER 35 U.S.C. § 112, FIRST PARAGRAPH BECAUSE THE SPECIFICATION AND THE FIGURES CLEARLY DISCLOSE A CLAMP

Appellant respectfully submits that the specification clearly enables the claims in the present application. FIG. 1A and the corresponding description (e.g., col. 3, ll. 9-24 of Pat. No. 5,966,286) describes an integral clamp structure 24 that is provided for attaching a heat pipe to a heat exchanger housing. Further, FIG. 5 clearly discloses another view of a heat exchanger housing having a heat pipe attached. Therefore, Appellant submits that the present specification provides a description that more than adequately enables one of ordinary skill in the art to make and use the invention as claimed without undue experimentation.

**2. THE PENDING CLAIMS 1-7, 9-14, 16-26, 28-32, 35-42, 45-48 AND 52 WERE IMPROPERLY REJECTED UNDER 35 U.S.C. § 103(a) BECAUSE KITAHARA DOES NOT DISCLOSE OR SUGGEST EACH AND EVERY FEATURE OF THE PENDING CLAIMS**

Appellant respectfully submits that the combination of embodiments disclosed in *Kitahara* fails to disclose or suggest the claimed invention for the reasons set forth below. As the Honorable Board is well aware, in order to establish a *prima facie* case of obviousness:

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.” (Emphasis added). *In re Vaech*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Manual of Patent Examining Procedure (MPEP), 8<sup>th</sup> Edition, Revision 2, May 2004, §2143.

**(A) Claims 1-7, 9-14, 16-26, 28-32, 35-42, 45-48 and 52 were improperly rejected because *Kitahara* does not disclose or suggest a housing having a clamp to attach a heat pipe to the housing**

Claims 1-7, 9-14, 16-26, 28-32, 35-42, 45-48 and 52 recite an element that is not disclosed in *Kitahara*. For example, Appellant’s independent claim 1 recites the following:

An adapter comprising:  
an infrared transceiver to transmit and receive An  
apparatus removing heat from a heat generating  
component, said apparatus comprising:  
a heat pipe comprising an evaporator portion and a  
condenser portion, said heat generating component  
being thermally coupled to said evaporator portion;

an air duct comprising a housing having internal fins and a clamp, said air duct directing an air flow from an inlet port located near the center of said air duct to first and second exit ports located at opposite end portions of said air duct, said condenser portion of said heat pipe being attached to said housing via said clamp; and  
an air flow generator coupled to said inlet port for producing said air flow.

Appellant's independent claims 9, 16, 19, 20, 28, 35-37, 45 and 52, recite similar features to those of claim 1.

*Kitahara* discloses an integral fan type heat-generating element cooling device wherein a fan unit is disposed at the side of an assembly of a heat-generating element and a heat sink connected by a cover prepared by a material with a good heat conductivity. One or more side plates of the fan unit are provided with openings. The openings are provided at the back side of the fan unit, that is, the side furthest from the heat sink. By allowing part of the air to escape, a rise in the air pressure at the back of the closed fan unit is avoided, pressure loss of the fan is reduced, and the load is lightened, resulting in making it possible for a sufficient amount of air to be secured. See *Kitahara* at Figures 72 and 73.

*Kitahara* also discloses another embodiment of a separated heat-generating element cooling device where the heat sink is affixed on a printed circuit board adjoining a heat-generating element. A heat pipe is laid between the heat sink and the heat-generating element. The heat pipe is affixed to the top surface of the heat sink and the other end is affixed to the heat-generating element. The heat pipe is formed in a flat fork-shape branching at the heat sink side so as to be directly struck by the cooling air from the fan unit and cool above a high heat emitting portion of the heat-generating element at the heat-generating element side. To house one end of the fork, the heat sink is formed

with a space for fitting it where no pin-shaped cooling fins are provided. The heat-generating element side is mounted on the top surface of the heat-generating element sandwiched in between a base plate affixed using for example an adhesive with a good heat conductivity and a fixing plate screwed to the base plate (Figures 45 and 46).

Appellant submits that neither *Kitahara* embodiment discloses or suggests attaching a heat pipe to a housing via a clamp. The Examiner, however, asserts that the embodiment of *Kitahara* described with reference to Figures 44, 45 and 49 discloses a heat pipe mounted on a structure of a device via a clamp. See Final Office Action at page 4, paragraph 2. Appellant respectfully disagrees with the Examiner's assertion. *Kitahara* discloses that a fitting 56 is affixed to a heat sink 2 by fastening flanges 56c together with a fan unit 3 to heat-radiating fins 4 or specially provided support columns positioned at four corners of the heat sink 2. Thus, the forked portion of the heat pipe 55 is sandwiched between the top surface of the heat sink 2 and the pipe holding grooves 56a. See *Kitahara* at Figure 49. Nevertheless, a heat pipe fastened between a cooling fan and radiating fins is not equivalent to a housing having a clamp to attach a heat pipe to the housing.

Moreover, Appellant submits that the *Kitahara* embodiment disclosed with respect to Figures 72 and 73 is not compatible with the embodiment described in Figures 45, 46 and 49. The embodiment described with reference to Figures 72 and 73 does not provide for the physical placement of a heat pipe between the heat-generating element and the heat sink. In such an embodiment, the cooling device is integrated with the heat generating element, while in the other embodiment the cooling device and heat generating element are disposed away from one another with the heat pipe laid between to conduct heat away from the element. Appellant submits that it would be impracticable

to combine such disparate embodiments. Therefore, Appellant respectfully submits that it would be impermissible hindsight to combine the embodiment described with respect to Figures 72 and 73 and the embodiment described in Figures 45, 46 and 49 since such embodiments of Kitahara teach away from each other.

Accordingly, independent claims 1, 9, 16, 19, 20, 28, 35-37, 45 and 52 are patentable over the combination of *Kitahara*.

Claims 2-8, 10-15, 17-18, 21-27, 29-32, 38-42 and 46-48 depend from claims 1, 9, 16, 20, 28, 37 and 45, respectively, and include additional limitations. Therefore, the invention as claimed in claims 2-8, 10-15, 17-18, 21-27, 29-32, 38-42 and 46-48 are similarly patentable over the combination of *Kitahara*.

For the forgoing reasons, Appellant submits that the Examiner has failed to search and find a printed publication or patent that discloses the claimed invention as set forth in MPEP § 706.02(a).

Thus, the Examiner erred in rejecting claims 1-7, 9-14, 16-26, 28-32, 35-42, 45-48 and 52 under 35 U.S.C. §103(a).

2. THE PENDING CLAIMS 8, 15, AND 27 WERE IMPROPERLY REJECTED UNDER 35 U.S.C. § 103(a) BECAUSE ANY COMBINATION OF *KITIHARA* AND *NELSON* DO NOT DISCLOSE OR SUGGEST EACH AND EVERY FEATURE OF THE PENDING CLAIMS

Appellant respectfully submits that the combination of *Kitahara* and *Nelson* fails to disclose or suggest the claimed invention for the reasons set forth below. .

(A) Claims 8, 15 and 27 were improperly rejected because *Kitahara*, and *Nelson* do not disclose or suggest a housing having a clamp to attach a heat pipe to the housing

Claims 8, 15 and 27 are not obvious in view of *Kitahara* and *Nelson* under 35 U.S.C. §103(a). Claims 8, 15 and 27 depend from independent claims 1, 9 and 20, respectively, and necessarily include each of the features. As discussed above, nowhere does *Kitahara* disclose or suggest each and every element of the Appellant's independent claims 1, 9 and 20. For example, *Kitahara* fails to disclose or suggest a housing having a clamp to attach a heat pipe to the housing.

With respect to claims 8, 15 and 27, the Examiner states that *Nelson* discloses a resonate cantilever vibrator employed as a cooling fluid flow generator for a cooling fluid. See Final Office Action at page 5, paragraph 6. However, *Nelson* does not disclose or suggest a housing having a clamp to attach a heat pipe to the housing. Instead, *Nelson* discloses a fluid heat exchanger for cooling an electronic component including a housing having a fluid inlet and fluid outlet. See *Nelson* at Abstract. Therefore, any combination of *Kitahara* and *Nelson* would also not disclose or suggest a housing having a clamp to attach a heat pipe to the housing.



It is also respectfully submitted that *Kitahara* does not teach or suggest a combination with *Nelson* and *Nelson* does not teach or suggest a combination with *Kitahara*. It would be impermissible hindsight based on Appellant 's own disclosure to incorporate the heat-generating element cooling device in *Kitahara* and the heat exchanger having piezoelectric fan means in *Nelson*. Moreover, such a combination would still lack a housing having a clamp to attach a heat pipe to the housing.

Since the combination of *Kitahara* and *Nelson* fails to disclose all of the elements required by Appellant's independent claims 1, 9 and 20, the combination of *Kitahara* and *Nelson* fails to teach or suggest each and every element of Appellant's invention as embodied in the claims. Consequently, the Examiner has not established a prima facie case of obviousness, and the Examiner's rejection of claims 8, 15 and 27 under 35 U.S.C. §103(a) as being obvious over *Kitahara* and *Nelson* should be reversed.

### VIII. CONCLUSION

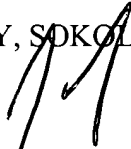
Careful review of the Examiner's rejections shows that the Examiner has failed to provide any reference, or combination of references of the prior art that shows all of the elements of each appealed claim. Therefore, Appellant respectfully submits that all appealed claims in this application are patentable and were improperly rejected by the Examiner during prosecution before the United States Patent and Trademark Office. Appellant respectfully requests that the Board of Patent Appeals and Interferences overrule the Examiner and direct allowance of the rejected claims.

This brief is submitted with a check for \$500.00 to cover the appeal fee for one other than a small entity as specified in 37 C.F.R. § 1.17(c). Please charge any shortages and credit any overcharges to our Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: April 19, 2006

  
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FIRST CLASS CERTIFICATE OF MAILING

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Date of Deposit: April 19, 2006

Name of Person Mailing Correspondence: Leah Schwenke

 4/19/06  
Signature Date

**IX. APPENDIX OF CLAIMS (37 C.F.R. § 41.37(c)(1)(viii))**

The claims on appeal read as follows:

1. An apparatus removing heat from a heat generating component, said apparatus comprising:

a heat pipe comprising an evaporator portion and a condenser portion, said heat generating component being thermally coupled to said evaporator portion;

an air duct comprising a housing having internal fins and a clamp, said air duct directing an air flow from an inlet port located near the center of said air duct to first and second exit ports located at opposite end portions of said air duct, said condenser portion of said heat pipe being attached to said housing via said clamp; and

an air flow generator coupled to said inlet port for producing said air flow.

2. The apparatus of claim 1 wherein said heat generating component comprises an integrated circuit.

3. The apparatus of claim 1 wherein said housing comprises a first plate and a second plate having respective first and second internal surfaces, said first internal surface having a first array of protruding members that constitute said internal fins.

4. The apparatus of claim 1 wherein said housing comprises a first plate and a second plate having respective first and second internal surfaces, said first internal surface having a first array of protruding members, said second internal surface having a second array of protruding members wherein said first and second array of protruding members constitute said internal fins.

5. The apparatus of claim 1 wherein said housing comprises a material having a high thermal conductivity.
6. The apparatus of claim 1 wherein said housing comprises aluminum.
7. The apparatus of claim 1 wherein said air flow generator comprises a fan.
8. The apparatus of claim 1 wherein said air flow generator comprises a resonate cantilever vibrator.
9. An apparatus cooling an integrated circuit package assembly located within a portable computer chassis, said apparatus comprising:  
a heat exchanger comprising:  
an air duct having a thin cross-section relative to the width of said duct, said air duct comprising a housing having first and second major internal surfaces, an array of fins disposed between said first and second surfaces, and a clamp, said housing further comprising an inlet port disposed at or near a center portion of said air duct and first and second exit ports disposed at respective opposite first and second end portions of said duct; and  
an air flow generator coupled to said inlet port for producing a first and a second air flow, said first air flow being directed from said inlet port to said first exit port, said second air flow being directed from said inlet port to said second exit port;

a heat pipe having an evaporator portion and a condenser portion, said integrated circuit package being thermally coupled to said evaporator portion; said condenser portion being coupled to said housing of said air duct via the clamp.

10. The apparatus of claim 9 wherein said fins comprise integrally formed protruding members along said first internal surface.

11. The apparatus of claim 9 wherein said fins comprise a first and second array of protuberances integrally formed along said first and second internal surfaces, respectively.

12. The apparatus of claim 9 wherein said housing comprises a material having a high thermal conductivity.

13. The apparatus of claim 9 wherein said housing comprises aluminum.

14. The apparatus of claim 9 wherein said air flow generator comprises a fan.

15. The apparatus of claim 9 wherein said air flow generator comprises a resonate cantilever vibrator.

16. A portable computer comprising:

an enclosure having an air duct comprising a housing having internal fins and a clamp, said air duct directing an air flow from an inlet port located near the center of said

air duct to first and second exit ports located adjacent opposite end portions of said air duct, said air duct having a substantially equal width as said enclosure, said enclosure comprising first, second and third sides;

an air flow generator coupled to said inlet port for producing said air flow; and

heat transfer means thermally coupling a heat generating component located within said enclosure to said air duct housing, said heat transfer means being coupled to said housing of said air duct via the clamp.

17. The portable computer of claim 16 wherein said first and second exit ports face said first side such that said air flow leaves said enclosure from said first side.

18. The portable computer of claim 16 wherein said first and second exit ports face said second and third sides, respectively, such that said air flow leaves said enclosure from said second and third sides.

19. A method for cooling a heat generating component located within an enclosed compartment, said method comprising:

thermally coupling said heat generating component to the housing of an air duct having a thin cross-section relative to the width of said air duct, including:

thermally coupling said component to an evaporator portion of a heat pipe;

and

thermally coupling a condenser portion of said heat pipe to said air duct housing, said condenser portion of said heat pipe being physically coupled to said housing of said air duct via the clamp; and  
producing an air flow through said air duct by directing air external to said compartment into an inlet port located at or near the center of said air duct and splitting said air flow into a first air flow and a second air flow, said first air flow being directed to a first exit port located at a first end portion of said air duct, said second air flow being directed to a second exit port located at a second end portion of said air duct.

20. An apparatus comprising:

a heat pipe comprising an evaporator portion and a condenser portion, said heat pipe coupled to a heat generating component at the evaporator portion of the heat pipe;

an air duct comprising a housing, said air duct directing an air flow from an inlet port, located at or near a middle of the air duct, to a first and second exit port located at opposite ends of the air duct, said air duct coupled to the condenser portion of said heat pipe via a clamp mounted on the housing; and

an air flow generator coupled to said inlet port to produce the air flow.

21. The apparatus of claim 20 wherein said heat generating component is an integrated circuit.

22. The apparatus of claim 20 wherein said housing comprises a first plate and a second plate having respective first and second internal surfaces, said first internal surface having a first array of protruding members that constitute internal fins.

23. The apparatus of claim 20 wherein said housing comprises a first plate and a second plate having respective first and second internal surfaces, said first internal surface having a first array of protruding members, said second internal surface having a second array of protruding members wherein said first and second array of protruding members constitute internal fins.

24. The apparatus of claim 20 wherein said housing comprises a material having a high thermal conductivity.

25. The apparatus of claim 20 wherein said housing comprises aluminum.

26. The apparatus of claim 20 wherein said air flow generator is a fan.

27. The apparatus of claim 20 wherein said air flow generator is a resonate cantilever vibrator.

28. A heat exchanger comprising:

an air duct having a housing including an inlet port located at or near a middle of the air duct, a clamp and a first and second opposing exit ports;

an air flow generator coupled to the inlet port to produce an air flow, the air flow being directed from the inlet port to the exit port;

a heat pipe having an evaporator portion and a condenser portion, the evaporator portion coupled to an integrated circuit package, and the condenser portion being coupled



to the air duct via the clamp.

29. The heat exchanger of claim 28 wherein the air duct includes fins protruding along an internal surface.

30. The heat exchanger of claim 29 wherein the fins include a first and second array of protuberances integrally formed along a first and second internal surfaces of the air duct, respectively.

31. The heat exchanger of claim 28 wherein the air duct includes a material having a high thermal conductivity.

32. The heat exchanger of claim 28 wherein the air duct comprises aluminum.

35. A system comprising:  
an air duct housing having an inlet port located at or near a middle of the air duct,  
a clamp and a first and second exit port located at opposite ends of the air duct;  
an air flow generator coupled to the inlet port to produce an air flow; and  
heat pipe coupling a heat generating component to the air duct housing via the clamp.

36. A method comprising:  
thermally coupling a heat generating component to a housing of an air duct;  
thermally coupling the component to an evaporator portion of a heat pipe, and

thermally coupling a condenser portion of the heat pipe to the air duct housing, said condenser portion of said heat pipe being physically coupled to said housing of said air duct via the clamp; and

producing an air flow through the air duct by directing air external into an inlet port located at or near a center point in the air duct and splitting said air flow into a first air flow and a second air flow, said first air flow being directed to a first exit port located at a first end of the air duct, said second air flow being directed to a second exit port located at a second end of the air duct opposing the first end.

37. An apparatus comprising:

a heat pipe to be coupled to a heat generating component;

an air duct comprising a housing having internal fins, said air duct directing an air flow from an inlet port positioned at a central point of the air duct, to first and second exit ports located at opposite end portions of said air duct, the housing coupled to the heat pipe via a clamp; and

an air flow generator coupled to the inlet port to produce air flow.

38. The apparatus of claim 37 wherein the heat generating component is an integrated circuit.

39. The apparatus of claim 37 wherein the housing includes a first plate and a second plate having respective first and second internal surfaces, the first internal surface having a first array of protruding members that constitute internal fins.

40. The apparatus of claim 37 wherein the housing includes a first plate and a second plate having respective first and second internal surfaces, the first internal surface having a first array of protruding members, the second internal surface having a second array of protruding members wherein the first and second array of protruding members constitute internal fins.

41. The apparatus of claim 37 wherein the housing includes a material having a high thermal conductivity.

42. The apparatus of claim 37 wherein the housing comprises aluminum.

45. A heat exchanger comprising:

an air duct having an inlet port situated at a central point of the air duct, first and second exit ports disposed at respective opposite first and second end portions of said duct, and a clamp; and

an air flow generator coupled to said inlet port to produce a first and a second air flow, said first air flow being directed from said inlet port to said first exit port, said second air flow being directed from said inlet port to said second exit port;  
a heat pipe coupled to the housing of the air duct via the clamp.

46. The heat exchanger of claim 45 wherein the air duct include fins protruding along a first internal surface.

47. The heat exchanger of claim 45 wherein the housing comprises a material having a high thermal conductivity.

48. The heat exchanger of claim 45 wherein the housing comprises aluminum.

52. A method comprising:

thermally coupling a heat generating component to an air duct;

thermally coupling the component to a heat pipe, and thermally coupling the heat pipe to the air duct said heat pipe being physically coupled to said housing of said air duct via the clamp; and

producing an air flowthrough the air duct by directing air external to the air duct into an inlet port situated at a central point of the air duct ,and splitting the air flow into a first air flow and a second air flow, said first air flow being directed to a first exit port located at a first end portion of said air duct, said second air flow being directed to a second exit port located at a second end portion of said air duct.

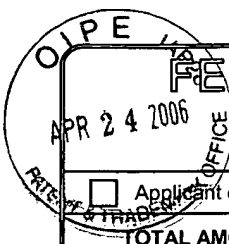
**X. EVIDENCE APPENDIX**

None

**XI. RELATED PROCEEDING APPENDIX**

None

AF ZMW



# **FEE TRANSMITTAL for FY 2005**

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

## **Complete if Known**

Application Number	09/976,912
Filing Date	May 14, 2002
First Named Inventor	O'Connor
Examiner Name	Vortman, Anatoly
Art Unit	2835
Attorney Docket No.	42P3674R

**TOTAL AMOUNT OF PAYMENT (\$)**

## **METHOD OF PAYMENT (check all that apply)**

☐ Check ☐ Credit card ☐ Money Order ☐ None ☐ Other (please identify): \_\_\_\_\_

☒ Deposit Account Deposit Account Number: 02-2666 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee  
☒ Charge any additional fee(s) or underpayment of fee(s) ☒ Credit any overpayments under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.

## **FEE CALCULATION**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1,020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1,080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	
1403	1,000	2403	500	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	790	1809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
Other fee (specify) _____					
SUBTOTAL (2) (\$)					

## **SUBMITTED BY**

## **Complete (if applicable)**

Name (Print/Type)	Mark L. Watson	Registration No. (Attorney/Agent)	46,322	Telephone	(303) 740-1980
Signature		Date	04/19/06		

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April 19, 2006

Mail Stop Appeal Brief-Patents  
Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Via FIRST CLASS US Mail

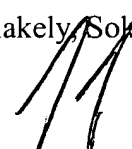
Re: **Letter regarding Fees**  
U.S. Patent Application for:  
Application No.: 09/976,912  
Filing Date: May 14, 2002  
Application Title: "Cooling System for Thin Profile Electronic and  
Computer Devices"  
Our Docket No.: 042390.P3674R

Dear Sir:

Applicant respectfully believes the Appeal Brief fee is unnecessary based on the Final Office Action mailed December 22, 2005, for the above-referenced patent application. The Examiner states on page 2 under 1(2) that the previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. A copy of this document has been provided for this purpose.

Blakely, Sokoloff, Taylor & Zafman, LLP

Date: April 19, 2006

  
\_\_\_\_\_  
Mark L. Watson, Reg. No. 46,322


MLW/lss  
Enclosure

## FIRST CLASS CERTIFICATE OF MAILING

I hereby certify that I am causing the above-referenced correspondence to be deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and that this paper or fee has been addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Date of Deposit: 4/19/06

Name of Person Mailing Correspondence: Leah Schwenke

  
\_\_\_\_\_  
Signature

4/19/06  
Date





## UNITED STATES PATENT AND TRADEMARK OFFICE

APR 24 2006

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United States Patent and Trademark Office  
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APPLICATION NO. & TRADEMARK FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,912	Michael O'Connor	42390.P3674R	1765

8791 7590 12/22/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN  
12400 WILSHIRE BOULEVARD  
SEVENTH FLOOR  
LOS ANGELES, CA 90025-1030

EXAMINER

VORTMAN, ANATOLY

ART UNIT

PAPER NUMBER

2835

DATE MAILED: 12/22/2005

RECEIVED

DEC 28 2005

DEC 27 2005

BEST PRACTICE PERIOD

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP  
LOS ANGELES

Please find below and/or attached an Office communication concerning this application or proceeding.

Date 3/22/2006 Client: Intel Corporation

Docket Initials JP 42390.P3674R

Dock. Sup. Initials

Atty Initials EHT MLW

Pat/Ser/Reg 976912

## Description:

3 x

Response due final OA and possible appeal/pre-appeal conference.

12/27/2005

JOHN\_P

496160

Date 2/22/2006 Client: Intel Corporation

Docket Initials JP 42390.P3674R

Dock. Sup. Initials

Atty Initials EHT MLW

Pat/Ser/Reg 976912

## Description:

4

Two months since final oa was mailed

12/27/2005

JOHN\_P

496161

Date 3/22/2006 Client: Intel Corporation

Docket Initials JP 42390.P3674R

Dock. Sup. Initials

Atty Initials EHT MLW

Pat/Ser/Reg 976912

## Description:

155 x

If advisory action or notice of allowance not received by today, review file for possible filing of continuation application.

12/27/2005

JOHN\_P

496162

Date 3/15/2006 Client: Intel Corporation

Docket Initials JP 42390.P3674R

Dock. Sup. Initials

Atty Initials EHT MLW

Pat/Ser/Reg 976912

## Description:

156

Reminder, review file for possible filing of continuation application if advisory action or notice of allowance not received by 3/22/2006.

12/27/2005

JOHN\_P

496163

RECEIVED

DEC 29 2005

Blakely, Sokoloff, Taylor & Zafman  
Denver



AK

<b>Application No.</b> 09/976,912		<b>Applicant(s)</b> O'CONNOR ET AL.	
<b>Examiner</b> Anatoly Vortman		<b>Art Unit</b> 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2005 (Appeal Brief).
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32, 35-42, 45-48 and 52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32, 35-42, 45-48 and 52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### Reissue Application

#### *Appeal Brief*

1. In view of the arguments presented in the Appeal Brief filed on 12/02/05, PROSECUTION IS HEREBY REOPENED. The finality of the previous final Office action is hereby withdrawn and new final Office action set forth below. The finality is appropriate, because all independent claims of record 1, 9, 16, 19, 20, 28, 35, 36, 37, 45, and 52 have been amended by Amendment filed on 06/20/05. To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution.

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*Amendment*

2. All independent claims of record 1, 9, 16, 19, 20, 28, 35, 36, 37, 45, and 52 have been amended by amendment filed on 06/20/05. Claims 33, 34, 43, 44, and 49-51 have been previously cancelled. Thus, claims 1-32, 35-42, 45-48, and 52 are pending in the instant application.

*Claim Rejections - 35 USC § 112*

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-32, 35-42, 45-48, and 52 (i.e. all pending claims), are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter added by the amendment, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

All independent claims of record have been amended to recite that the heat pipe being attached to the structure via a "clamp".

The specification of the underlying US/5,966,286 for which reissue is sought, despite mentioning that the heat pipe may be mounted via a clamp, nonetheless is lacking adequate teaching regarding the structure of the clamp and how said heat pipe is mounted via said clamp.

The Fig. 1A, 1B, and 2, despite depicting the clamp (24), do not show however the structure of the clamp and how it holds the heat pipe.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-7,9-14,16-26,28-32,35-42,45-48 and 52, are rejected under 35 U.S.C. 102(e) as being anticipated by US/5,583,316 to Kitahara et al., (Kitahara).

Regarding claim 1, 2, and 7, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) an apparatus removing heat from a heat generating component (integrated circuit) (1), said apparatus comprising: a heat pipe (55) comprising an evaporator portion and a condenser

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portion, said heat generating component (1) being thermally coupled to said evaporator portion; an air duct comprising a housing (formed by members (2) and (3)) having internal fins (4) (column 23, lines 41-43) and a clamp (56), said air duct directing an air flow from an inlet port located near the center of said air duct (opening of the fan (3)) to first and second exit ports located at opposite end portions of said air duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins), said condenser portion of said heat pipe (55) being attached to said housing via said clamp (56), and an air flow generator (3) (a fan) coupled to said inlet port for producing said air flow.

Regarding claim 9, 10, and 14, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) an apparatus cooling an integrated circuit package assembly (1) located within a portable computer chassis (column 1, lines 15+), said apparatus comprising: a heat exchanger comprising: an air duct having a thin cross-section relative to the width of said duct, said air duct comprising a housing (formed by members (2) and (3)) having first and second major internal surfaces (inner surfaces of members (2) and (3)), an array of fins (4) disposed between said first and second surfaces (column 23, lines 41-43) and protruding from said second surface (Fig. 45), and a clamp (56), said housing further comprising an inlet port disposed at or near a center portion of said air duct (opening of the fan (3)) and first and second exit ports disposed at respective opposite first and second end portions of said duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins); and an air flow generator (3) (a fan) coupled to said inlet port for producing a first and a second air flow (inherently), said first air flow being directed from said

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inlet port to said first exit port, said second air flow being directed from said inlet port to said second exit port (inherently); a heat pipe (55) having an evaporator portion and a condenser portion, said integrated circuit package (1) being thermally coupled to said evaporator portion; said condenser portion being coupled to said housing of said air duct via the clamp (56).

Regarding claim 16, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) a portable computer (column 1, line 15+) comprising: an enclosure having an air duct comprising a housing (formed by members (2) and (3)) having internal fins (4) (column 23, lines 41-43), and a clamp (56), said air duct directing an air flow from an inlet port located near the center of said air duct (opening of the fan (3)) to first and second exit ports located adjacent opposite end portions of said air duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins), said air duct having a substantially equal width as said enclosure, said enclosure comprising first, second and third sides (inherently); an air flow generator (3) coupled to said inlet port for producing said air flow; and heat transfer means (55) thermally coupling a heat generating component (1) located within said enclosure to said air duct housing, said heat transfer means (55) being coupled to said housing of said air duct via the clamp (56).

Regarding claims 17 and 18, Kitahara disclosed (Fig. 50 (A) (B)) that said exit ports are positioned on at least three sides of the enclosure (any openings between fins (4), would constitute the exit port, since the cooling air would be exiting between said fins (4)).

Regarding claims 20, 21, and 26, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) an apparatus comprising: a heat pipe (55) comprising an evaporator portion and a condenser portion, said heat pipe (55) coupled to a heat generating component (integrated circuit) (1) at the

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evaporator portion of the heat pipe (55); an air duct comprising a housing (formed by members (2) and (3)), said air duct directing an air flow from an inlet port, located at or near a middle of the air duct (an opening of the fan (3)), to a first and second exit ports located at opposite ends of the air duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port), said air duct coupled to the condenser portion of said heat pipe (55) via a clamp (56) mounted on the housing; and an air flow generator (3) ( a fan) coupled to said inlet port to produce the air flow.

Regarding claim 28, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)), a heat exchanger comprising: an air duct having a housing (formed by members (2) and (3)) including an inlet port located at or near a middle of the air duct (opening of the fan (3)), a clamp (56) and a first and second opposing exit ports (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins); an air flow generator (3) (a fan) coupled to the inlet port to produce an air flow, the air flow being directed from the inlet port to the exit port; a heat pipe (55) having an evaporator portion and a condenser portion, the evaporator portion coupled to an integrated circuit package (1), and the condenser portion being coupled to the air duct via the clamp (56).

Regarding claim 35, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) a system comprising: an air duct housing (formed by members (2) and (3)) having an inlet port located at or near a middle of the air duct (opening of the fan (3)), a clamp (56) and a first and second exit port located at opposite ends of the air duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins); an air flow generator (3) (a fan) coupled to the inlet port to produce an



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air flow; and heat pipe (55) coupling a heat generating component (1) to the air duct housing via the clamp (56).

Regarding claim 37 and 38, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) an apparatus comprising: a heat pipe (55) to be coupled to a heat generating component (integrated circuit) (1); an air duct comprising a housing (formed by members (2) and (3)) having internal fins (4) (column 23, lines 41-43), said air duct directing an air flow from an inlet port positioned at a central point of the air duct (opening of the fan (3)), to first and second exit ports located at opposite end portions of said air duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins), the housing coupled to the heat pipe via a clamp (56); and an air flow generator (3) (a fan) coupled to the inlet port to produce air flow.

Regarding claim 45, Kitahara disclosed (Fig. 45, 49, 50(A), 50(B)) a heat exchanger comprising: an air duct (formed by members (2) and (3)) having an inlet port situated at a central point of the air duct (opening of the fan (3)), first and second exit ports disposed at respective opposite first and second end portions of said duct (any openings between fins (4), including ones located at opposite end portions of the air duct, would constitute the exit port, since cooling air will be exiting between said fins), and a clamp (56); and an air flow generator (3) (a fan) coupled to said inlet port to produce a first and a second air flow, said first air flow being directed from said inlet port to said first exit port, said second air flow being directed from said inlet port to said second exit port (inherently); a heat pipe (55) coupled to the housing of the air duct via the clamp (56).

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Regarding method claims 19, 36, and 52, the method steps recited in the claims are inherently necessitated by the device structure as taught by Kitahara.

Regarding claims 3, 22, 29, 46, and 39, Kitahara disclosed (Fig. 45) that the housing includes a first plate (2) and a second plate (top surface of member (3)) having respective first and second internal surfaces (inherently), the first internal surface having a first array of protruding members (4) that constitute internal fins.

Regarding claims 4, 11, 23, 30, and, 40, Kitahara disclosed (Fig. 47 (A), 47 (B), and 48), that the first and second plates (65, 66) may have protruding fins (protuberances) on the respective internal surfaces.

Regarding claims 5, 6, 12, 13, 24, 25, 31, 32, 41, 42, 47, and 48, Kitahara disclosed that the housing comprising a material with high thermal conductivity (aluminum) (column 2, line 28).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 8, 15, and 27, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitahara in view of US/4,923,000 to Nelson.

Kitahara disclosed all, but the resonate cantilever vibrator.

Nelson disclosed (Fig. 1) a resonate cantilever vibrator employed as a cooling fluid flow generator for a cooling fluid.

Since inventions of Kitahara and of Nelson are from the same field of endeavor (cooling), the purpose of the cantilever vibrator disclosed by Nelson would be recognized in the invention of Kitahara.

It would have been obvious to a person of ordinary skill in the cooling art at the time the invention was made to substitute conventional cooling fan of Kitahara with cantilever vibrator of Nelson in order to simplify the device and to enhance the heat transfer characteristics (see Nelson, column 1, lines 1+).

### ***Response to Arguments***

9. Applicant's arguments regarding 35 USC 112, first paragraph, rejection, have been fully considered but they are not persuasive. The Applicant contends, that col. 3, lines 9-24 of US/5,966,286 adequately teach the clamp. However, said portion of the specification only briefly mentions that "an integral clamp structure 24 is provided for attaching a heat pipe". No detailed teaching of the clamp structure is provided. Also, the Examiner disagrees with Applicant's position that Fig. 1A and 5 adequately teach the clamp. Contrary to the Applicant's position, the Fig. 1A, 1B, and 5, despite schematically depicting the clamp (24), however, do not show the structure of the clamp and how it holds the heat pipe. Fig. 5 only shows schematically (by dotted lines), that the heat pipe is routed through the structure. Fig. 1A and 1B only show the partial opening in the structure (evidently for accepting the heat pipe). Thus, the teaching of the clamp is

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not sufficient to adequately enable one of ordinary skill in the relevant art to make and use the invention as claimed without undue experimentation. If Applicant believes that said clamp is an important feature of the invention (as evidenced by the recitation of the "clamp" in all pending independent claims), then the adequate teaching of said "clamp" should have been provided in the specification in order to satisfy the requirements of 35 USC 112, first paragraph.

Further, regarding the art rejection of claims 8, 15, and 27, the Applicant contends that combination of Kitahara and Nelson is improper, because "[I]t would be impermissible hindsight based on Appellant's own disclosure to incorporate the heat-generating element cooling device in *Kitahara* and the heat exchanger having piezoelectric fan means in *Nelson*".

The Examiner respectfully disagrees. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. *In re McLaughlin*, 443 F.2d 1392; 170 USPQ 209 (CCPA 1971). Further, the motivation to combine the references had been explicitly presented in the rejection (see p. 6, first two lines of the final Office action mailed on 07/14/05). Also, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971). References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. *In re Bozek*, 163 USPQ 545 (CCPA) 1969.

The remaining Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

10. Applicant's amendment (filed on 06/20/05) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

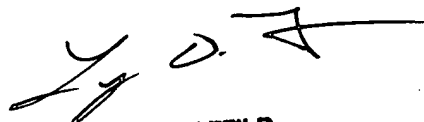
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 571-272-2047. The examiner can normally be reached on Monday-Friday, between 10:00 am and 6:30 pm..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Lynn Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
LYNN FEILD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

Anatoly Vortman  
Primary Examiner  
Art Unit 2835

AV

